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CAMOUFLAGE

MILITARY TRAINING PAMPHLET No. 46

Part 1: General Principles: Equipment and
Materials (all Arms).

1941

(This Pamphlet supersedes M.T.Ps. Nos. 20 and 26)

*Prepared under the direction of
The Chief of the Imperial General Staff*

THE WAR OFFICE,
20th June, 1941.

Prefatory Note

Military Training Pamphlet No. 46—Camouflage—is the main title of a series which will consist of the following parts:—

- Part 1. General principles, equipment and materials.
- Part 2. Field defences (all arms).
 - Huts, camps and installations.
 - Vehicles, wheeled and tracked.
 - Artillery, other than anti-aircraft.
 - Anti-aircraft defence.
 - Concealment in the face of the enemy. False work and deceit in the field.

NOTE.—The serial number indicates publication: remainder in preparation.

CONTENTS

Distribution See below

CHAPTER I. GENERAL PRINCIPLES

SEC.		PAGE
1.	The definition of "camouflage"	1
2.	The discipline of concealment	1
3.	The science of deceit	1
4.	Shadow and shine	2
5.	Background	2
6.	The tone of the background—texture or colour? ..	3
7.	The pattern of the background	4
8.	Natural cover	4
9.	What guides the attack?	5
10.	Conclusion	7

CHAPTER II. EQUIPMENT AND MATERIALS

11.	The choice of materials	8
12.	Unit equipment	9
13.	Concealment material for all purposes	9

DISTRIBUTION

Cav., R.A.C., R.A., R.E., R. Sigs., Inf., R.A.S.C.,	
R.A.O.C., I.C. P. Corps	Scale C.
Other arms.	Scale B.
O.C.T.Us., all arms	Scale IV.
R.E. Works Services	Scale C.

MILITARY TRAINING PAMPHLET

No. 46

Part 1. General Principles: Equipment and Materials (all Arms), 1941

CHAPTER I. GENERAL PRINCIPLES

1. Definition of "camouflage"

The word "camouflage" is probably derived from the French "camouflet," which has its roots in the Walloon and of which the original meaning was "the action of puffing smoke into someone's face." It is reasonable that its use should have been extended to cover "the art of blinding enemy observation," and that for this reason the word "camouflage" should have passed into the vocabulary of the army with its present meaning.

The art of camouflage involves a combination of two elements:—

- A. The discipline of concealment.
- B. The science of deceit.

Neither calls for intellectual abilities beyond the ordinary, but both call for clear thought and the willingness to take a great deal of trouble. To-day "camouflage" might be defined as "concealment and deceit in the field."

2. The discipline of concealment

1. Man was not born to fly, and it is only by his remarkable infringement of the laws of nature that he has put himself in danger of being attacked from the air. He is not equipped by nature to meet this danger, and though an adaptable animal, thirty years is not long enough for him to develop an instinctive sense of what to do when attacked from this new angle.

As this instinct is lacking, a code of controlled behaviour must be evolved and enforced which is both unnatural and irksome. It must be enforced by discipline, which is the discipline of concealment, and any individual who fails to observe it is saving himself trouble at the expense of the lives of others.

3. The science of deceit

1. The science of deceit is a science or technique used for a special purpose as occasion demands. It is a means to an

end, not an end in itself. It can be used in many ways, but its chief uses are :—

- i. by *disguise* to convey to the enemy a false impression of the significance of a specific object.
- ii. by *dummy work* to convey to the enemy a false picture of the tactical situation.

The discipline of concealment properly enforced, should in time transform correct but unnatural behaviour into second nature. This process will be hastened if all are taught to become conscious of two vital factors—**shadow** and **shine**—and **background**.

4. Shadow and shine

1. Shadow

An object standing alone under the sun throws on to the level ground a shadow which may attract the enemy's attention more quickly than will the object itself. The size, shape and height of such an object can, if recorded on a photograph, be accurately gauged by a study of its shadow alone. Your shadow is your portrait in black on white. (See Plate I.)

2. Shine

As a source of danger, shine is in a class by itself. Even in dry weather, shine may reveal with the utmost clearness men, vehicles and buildings which in all other ways are admirably concealed.

Without flying experience, it is hard to appreciate this danger or to imagine the vividness with which objects hidden are made known by shine, which is simply the quality all smooth surfaces possess of reflecting light back into the sky. From steel helmets, from windows and windscreens, from tops of vehicles, from roofs of hutments and buildings, and from all flat concrete or asphalt surfaces, wherever light strikes directly, a complete picture will be reflected into the observer's eye, or camera's lens. In wet weather this danger is greatly increased, men and vehicles standing or moving on roads being thrown into strong silhouette. At night shine from wet surfaces may betray troop movements under which dry conditions might well escape notice.

It can only be defeated if steel helmets are covered, vehicle tops masked with nets correctly used, huts and buildings sited under thick cover and painted always with flat and gritty paint, concrete surfaces obscured. (See Plate II.)

5. Background

1. The background is no longer behind your back but under your feet. The development of aerial observation,

visual and photographic, has created a new background—the ground upon which all live and move. The story of every day life is written like a diagram on a blackboard in terms of soil disturbance, tracks and shadows.

6. The tone of the background—texture or colour ?

1. The tone of an object may be defined as its appearance as a mass in terms of black and white. In a photograph, a familiar scene will often appear unfamiliar owing to the fact that certain bright passages of colour which may have always caught the eye no longer stand out. The reason for this is that the camera sees primarily in terms of tone and tone is not greatly influenced by intensity of colour.

Each colour has its tonal quality, and in its purest state possesses a different tone value ; and it is in its purest state that a colour can be recognized as a colour at the greatest distance. But in a photograph, all is monochrome, besides which colours tend to lose their identity when seen from a great height. So, to the camera and to the high flying observer the ground is seen primarily in terms of tone. All colours can be raised and lowered in tone, but what in a landscape tends to do this is not nearly so much the range of tonal differences existing between the colours themselves as the influence of shadow. Depth of tone is essentially controlled by the amount of shadow *on* or *in* any area. The shadows *on* an area, i.e. *cast shadows*, are extremely important and their study is vital to concealment. But it is the shadows *in* an area which decide the permanent appearance of that area as seen by the camera or from a height. Everything—every part of the background—contains a greater or lesser number of shadows which are permanent and inseparable from the structure and texture of each object.

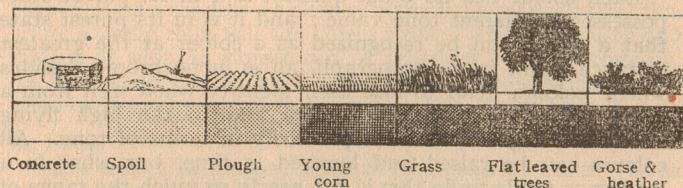
More than by colour then, the tone of the background is controlled by texture, and by texture is meant the permanent shadow content of each type of ground surface in so far as the shadows so contained are visible from the air. The broad leaves of a chestnut tree will themselves hide from the air view much of the shadow they cast on the ground, and on an air photograph the tone of this tree will be the result of the shadows cast by one leaf on to the next, these being the only shadows that are likely to be visible from the air. But bushes of gorse and heather seem almost black to the camera because their leaves are too minute to mask the shadows within. In a photograph a flat concrete surface holding no shadows will probably appear white, and because of the thousand shadows between the blades a field of grass will

photograph darker than a sheet of canvas which, in colour, is apparently a perfect match.

An appreciation of the texture of a background and the way in which texture controls the appearance of the background from the air is an essential preliminary to the business of concealment.

A further mental effort is needed to acquire the bird's eye view and so avoid being misled by the general appearance of certain surfaces when seen on the ground. A field of young corn when seen from a distance at ground level may appear light green, but from the air on a windless day probably the earth only is seen, darker than usual owing to the shadows cast by the young blades of corn. (Fig. 1.)

Fig. 1.



7. The pattern of the background

1. After learning the air view appearance of each type of ground surface—plough—fallow—crops—moorland and woods—the next step is to learn to see the picture as a whole. Every type of landscape—moorland—fen land—farming country—thinly or thickly populated districts, suburban, residential and industrial, in England or abroad—desert—mountains—has its individual pattern belonging to that district and no other.

In the same way every form of military activity—H.Qs.—field, A.A., and coastal artillery—communications—every part of the organization of daily life, makes its own patterns on the ground.

The whole problem of concealment of military activities is to make one pattern fit the other. The pattern of the landscape will hide an army as long as it is remembered that good cover is not a substitute for good discipline. (See Plates III and IV.)

8. Natural cover

1. The best interests of concealment as well as the best tactical interests are by no means always served by the use of the natural cover of woods. These are not only already suspect, but the cover afforded is often less than it appears.

2. It is worth while remembering that the efficiency of cover in woods depends greatly upon the sun. In strong sunlight it is much harder for the observer to pierce the cover of the leaves, and even bare branches are endowed by the sun with shadows that spread a protecting pattern over all who seek concealment.

3. Positions sited in woods in summer tend to develop an unnecessary amount of unconcealed works; men's quarters, cookhouses, etc. The result of this false sense of security may be serious when the winter comes. In the case of artillery, guns sited on the edge of a wood are liable to be discovered because the dark background shows up not only the flash but also the smoke, which in the open would disperse more quickly. Better cover, in that it lends itself less readily to identification, can be found in tall hedges, while a broken background of heath or scrub can always be improved so as to afford admirable concealment. For some cases the concealment afforded by a good background is better and also more permanently reliable than that given by overhead cover.

9. What guides the attack?

1. The type and weight of the attack is to a great extent decided by the strength and depth of the enemy's defences. An estimate of this must be based on knowledge of the approximate strength of the enemy forces available and a consideration of the system of defence most likely to be adopted. In some cases, topographical features make it possible to forecast this with fair certainty, but corroborative evidence and information as to detail is usually indispensable, and this can only be obtained by direct observation, either *scientific*—air photographs, sound ranging and flash spotting—or *human*, by ground or air reconnaissance. It is important to understand upon what evidence the observer and the interpreter of air photographs bases the deductions which are submitted to the staff responsible for the planning of an attack.

2. A patch of bare earth or heap of spoil which shows up as a small light patch on an air photograph may mean the presence of anything from a single hut to a headquarters. By itself it is of no great significance. Unfortunately, contributory evidence which will define exactly what the patch represents is almost always there for those whose business it is to read and mark. An irregular shadowy dark line, curving or zig-zagging round it, spells the presence of wire—so the ambiguous white patch is already identified as a

defended locality. Immediately arises the question—"Is this an isolated part of a defence system, or does it mean that there is something hidden behind it which calls for defence?" Two blurred whitish lines and a row of minute white specks at even intervals, or lines, fine as hairs, ruled across roads bounding an area, spell buried and overhead cables and the position of "X" headquarters is no longer a secret.

Every military operation leaves its own scar on the ground and the enemy is trained to diagnose that scar's significance. But fortunately before the highly skilled work of diagnosis can start, the photograph has to be taken, and here arise considerations which should not be overlooked when the question of concealment is examined.

The speed and range of mobile warfare and the vast target open to air observation and attack must to a certain extent reduce the proportion of that target which can be recorded on air photographs. The task of subjecting to a complete photographic scrutiny the thousands of square miles open to attack is enormous, and even if a complete photographic survey could be made the great advantage of comparative photographs taken at frequent intervals is scarcely likely to exist.

The magnitude of the task calls for a careful selection of those areas upon which the attention of the observer must concentrate. Certainly the main lines of defence will receive regular scrutiny, but the vast hinterland to which lie hidden H.Qs., camps, dumps, reserves of strength, may reasonably expect to receive a less microscopic examination.

3. This being so, the problem divides itself into two parts:—

- i. How to make signs of activity regularly observed by the enemy convey the minimum of information.
- ii. How to avoid attracting the attention of the enemy observer to those areas which must, if possible, escape photographic reconnaissance.

The answer to (i) may be confusion by multiplication rather than concealment, and the answer to (ii) is—Learn how not to catch the eye.

It is something wrong with the pattern which catches the eye—a track that is suddenly much straighter than any other and stops mysteriously, pointing at nothing, or one which describes a curve against a background of straight lines; the sudden hard squareness of a petrol dump or magazine against a background of soft hedgerows, irregular fields and casual parkland; shine from smooth surfaces left exposed;

regularity against an irregular background. In fact, anything which has failed to fit into the background shows as an alien silhouette.

The alien silhouette immediately catches the eye. The sniper so unwise as to look round the trunk of a tree on the horizon invites and receives a bullet. The convoy parked at an angle to the edge of a field invites and receives a number of bombs.

Any of these breaches of the discipline of concealment may draw the attention of the enemy observer, who will be followed by the photographic reconnaissance plane. There is no excuse for this once the danger is understood and the responsibility of enforcing this discipline accepted. If this is done, it is fair to say that, if reasonably far from the defence line, a well-concealed headquarters or camp stands a good chance of never appearing on an enemy photograph. If mistakes have been made in the past, the cry that "of course the enemy have already photographed the position" is a most mischievous one, and merely an excuse for shirking the work of putting matters right. (See Plate V, a, b, c, d, and Plates VI and VII.)

10. Conclusion

The instructions contained in the succeeding parts of this pamphlet are addressed to an Army in the field, whether operating against a background of English meadows, Egyptian deserts or Icelandic snows. The technique employed may vary greatly according to the characteristics of the particular theatre of operations, but the fundamental problem remains the same—that of fitting the patterns of war into the pattern of nature. This is a problem of siting. Good siting of military activities is the only single answer to the need for concealment. Without good siting the discipline of concealment may be neither enforceable, nor worth enforcing.

CHAPTER II. EQUIPMENT AND MATERIALS

(This chapter is intended to be used as an index to materials available and does not contain instructions as to their use. The succeeding parts of this pamphlet describe methods of use and reference to this chapter may be necessary when reading.)

11. Choice of materials

1. The type of materials needed for concealment will be decided by the method to be employed. This will depend upon the type of object or activity to be concealed and its position in relation to:—

- i. Its own background.
- ii. The angle and distance from which enemy observation may be expected.

These factors will decide whether overhead nets, screens, artificial mounds, simple ground coverings, or any other means should be used.

A further distinction may be drawn between work done on temporary positions and work which should be capable of giving concealment over a long period without excessive maintenance.

All concealment materials are chosen for their ability to match the background against which they will be used. The tone of this background, particularly when studied on air photographs, is decided by the texture of its surface rather than by its colour. Man, by destroying texture, alters the tone of the background, and the task of concealment involves re-creating this texture where the damage has been done. The materials of concealment are chosen either for their texture or for their ability to achieve depth of tone by allowing a proportion of the shadows beneath to be visible through them.

2. The sources of materials for concealment are:—

- i. The materials of every-day life—branches, turf, ashes or clinkers, debris of all sorts and any scrap building materials that may become available.
- ii. Material obtainable from Army sources but not specifically manufactured for concealment, such as paint, coir, hessian-canvas, X.P.M., etc.
- iii. Those obtainable from army sources and manufactured specifically for concealment purposes and having no other use, such as steel wool, nets with garnishing, etc.

12. Unit equipment

By unit equipment is meant materials for concealment issued to units on the scale laid down in Unit Equipment Tables (A.Fs.G. 1098), which is the scale considered sufficient to meet immediate operational needs. Further supplies can be obtained through normal channels for specific purposes such as concealment of special works (see Part II, Ch. I). Equipment is issued either ready for use or requires to be assembled after issue.

The scales of unit equipment are subject to alteration, but Table I (pages 10 and 11), shows the scale at the time of publication.

While ordnance services are normally the source of supply and replacement of unit camouflage equipment, certain of these stores are also held by R.E. sources, and may appear in both Ordnance and R.E. vocabularies. New materials invented and produced for concealment purposes are likely to be issued through R.E. channels until they pass into general use.

13. Concealment material for all purposes

1. For work beyond the scope of material issued as unit equipment, such as thickening overhead cover on a big scale, covering large quantities of spoil or executing major schemes of concealment, or for which these materials are not suitable, choice will not be confined to amounts and types laid down in Equipment Tables.

2. Nets

The chief item of concealment material is the net. This is an open mesh fish-net, and must not be confused with the shrimp net described later. The fish-net by itself is not capable of giving concealment. It is merely a foundation on which is attached the concealment material, which is coloured scrim garnish. In this respect it resembles galvanized wire netting, though this is not an item of unit equipment.

The fish-nets recommended as most suitable for general purposes are 35 ft. by 35 ft. without split for use by artillery; 24 ft. by 24 ft. and 35 ft. by 17 ft. These nets require hessian strip garnishing on a scale of 9, 5 and 4 rolls respectively. The 35 ft. by 35 ft. and its extension may be issued with wire frame, uprights and pickets, if required (see Part V, Artillery). Nets 14 ft. by 14 ft. are too small for general use and nets 29 ft. by 29 ft. are unsuitable, being split for use by artillery.

TABLE I.
SCALE OF CAMOUFLAGE EQUIPMENT AVAILABLE FOR UNITS

Serial (1)	Weapon or Vehicle, etc. (2)	Camouflage Equipment (3)	Scale (4)	Remarks (5)
1	Drum gun	14' x 14' garnished net supports and hairpins—12.	1 per ground gun in Inf. Bus.	Excludes Brens in Carrier and A.A., L.M.G.
2	2-in. Mortar	ditto	1 per 2-in. Mortar.	—
3	Vickers M.G.	14' x 14' garnished net.	1 per M.G.	In M.G. Battalions.
4	3-in. Mortar	25' x 12' Shrimp Net and 1 Spider.	1 per 3-in. Mortar.	—
5	2-Pr. A.Tk. Gun	14' x 7' garnished net draped over metal bar attached to gun shield.	1 per 2-Pr. A.Tk. Gun.	Used to break up outline of gun shield against ground observation.
6	ditto	25' x 12' Shrimp Net.	ditto	For camouflagage of gun and crew against air observation when not in action.
7	Field Gun or How. (all types)	(a) 29' x 29' (Arty) garnished net with 30' x 30' frame. (b) 29' x 14' garnished net with 30' x 15' frame.	1 per Field Gun or How. 4 per Field Gun or How.	(a) With split and lacing line. (b) For extension pieces.
8	Medium or Heavy Gun or How. (all types).	(a) 35' x 35' (Arty) garnished net with 36' x 36' frame. (b) 35' x 17' garnished net with 36' x 18' frame.	1 per Med. or Heavy Gun or How. 4 per Med. or Heavy Gun or How.	(a) As for 7 (a) above. (b) As for 7 (b) above.
9	Artillery O.Ps.	14' x 14' garnished net.	1 per post.	—
10	G.P.Os. Post	ditto	1 per post.	—

Serial	Weapon or Vehicle, etc.	Camouflage Equipment	Scale	Remarks
11	ARMoured VEHICLES Scout Car	35' x 15' Shrimp Net.	1 per Scout Car, to be cut in half by unit to make two nets 17½' x 15'.	—
12	Light Tanks (all marks)	25' x 12' Shrimp Net.	2 per A.F.V.	—
13	Light Dragon			
14	Carrier (all types)			
15	Armoured O.P.	35' x 15' Shrimp Net.	1 per A.F.V.	—
16	Armoured Car.			
17	Infantry Tank (all types)			
18	Cruiser Tanks (all types)	14' x 14' garnished net with 12 hairpins. 14' x 14' ditto 24' x 24' ditto	1 per vehicle. 2 per vehicle. 2 per vehicle.	—
19	Medium Dragon			
20	VEHICLES. Motor Car (all types)			
21	All trucks and lorries up to 30-cwt.			—
22	All lorries and trailers over 30-cwt.			—

3. Galvanized wire netting

Netting, wire, galvanized, is issued in rolls 36 in. or 48 in. wide and 50 yards long with varying mesh. The most convenient for general purposes being $1\frac{1}{2}$ in. This is an invaluable material for carrying hessian strip or natural garnish such as heather, bracken, etc. It is a general purposes supply and amounts needed for concealment should be carefully forecast. It is probably the best basis for materials used for concealing pillboxes by merging into the background. On exposed positions it is, however, less likely to stand up well to persistent high winds than ordinary netting unless the strongest varieties are employed, as it is likely to become torn if allowed to chafe against hard surfaces.

As garnished fish-nets are more easily rolled up and transported than garnished wire netting, these should be treated as mobile equipment, while galvanized wire netting should be issued for work which is likely to be semi-permanent or which would be difficult to dismantle.

4. Garnishing

1. Garnishing hessian strip is issued in rolls 2 in. wide, 100 yards long, in four colours—dark green, light green, light earth and brown.

Up to the date of publication it has been the practice to issue nets and garnishing strips separately, garnishing being applied to the nets by the units themselves. It is therefore essential that the correct method of doing this be clearly understood, as a wrongly garnished net does not conceal anything. The method of garnishing must aim at:—

- i. Giving sufficient cover, i.e. the correct degree of opacity.
 - ii. Producing a surface that matches the background in tone and colour.
 - iii. When used as an overhead cover, casting the type of shadow which will neither outline the edge of the net nor by its shape betray the net's presence to the air observer.
5. These requirements must always be met, but methods may vary according to the use to which the garnished nets or galvanized wire netting will be put.

These may be either:—

- i. As a single overhead cover without extensions.
- ii. As a form of drape.
- iii. As part of an overhead cover involving the use of two or more nets.
- iv. As material for mounding or covering ground.

To be of value, nets must match their surroundings. Their most common use is as concealment against air observation, and it is therefore essential that the appearance of their surroundings from the air and on air photographs be known. Study of Chapter I, which describes the factors controlling this appearance will therefore be of value. See also Part V (Artillery) for a more detailed analysis of the reasons for the method of garnishing here recommended.

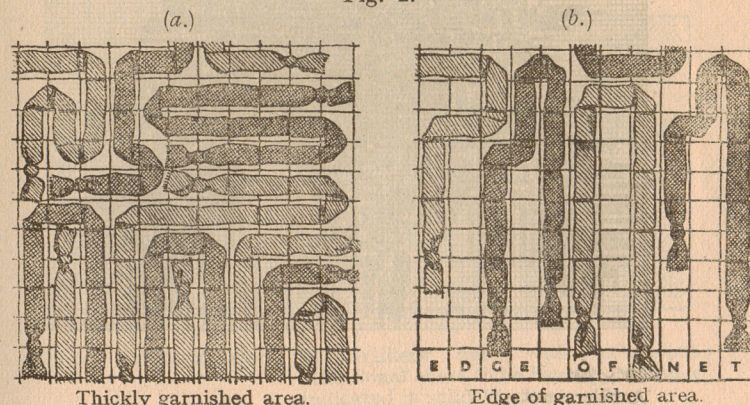
6. Rules for net garnishing (Type 1)

- i. Pin the net fully extended on the ground.
- ii. Cut rolls of garnish into lengths 5 ft. to 6 ft. long. For a 35 ft. by 35 ft. net, 9 rolls will be needed; for a 35 ft. by 17 ft. extension, 4 rolls will be needed; for a 29 ft. by 29 ft. net, 7 rolls; for a 29 ft. by 14 ft. extension, 3 rolls; for a 24 ft. by 24 ft. net, 5 rolls; for a 14 ft. by 14 ft., 2 rolls. This scale is sufficient for the nets which are to be thinned towards the edges, i.e. those used singly for overhead cover or those at the edge of a large composite cover. It will produce a proportion of two solids to one void in the centre or wherever maximum covering power is needed.

Rather more rolls of garnish will be needed for nets not thinned for use as overhead cover, and small quantities of garnish will be issued to units for maintenance, alterations in colour scheme, etc.

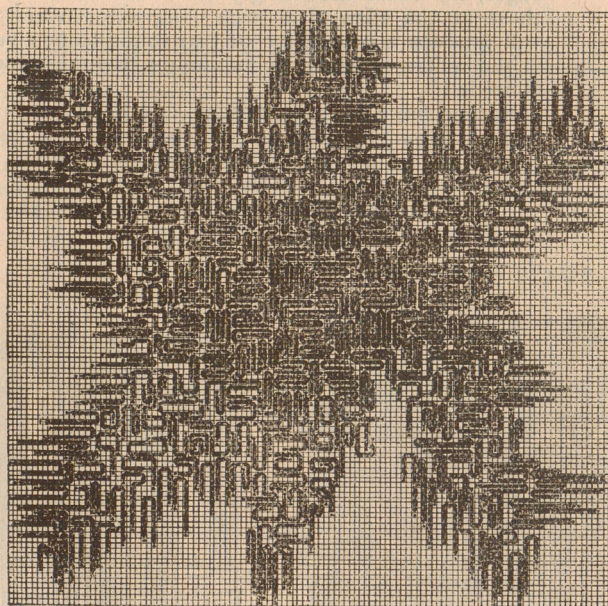
After strips have been cut, the colours should be mixed before garnishing commences.

Fig. 2.



- iii. Colour must be decided by the background, but for mobile troops operating against an English or similar landscape, a mixture of equal parts of the standard colours is most generally useful.
- iv. Strips must be woven flat into the net, as shown on diagram, and should always cross the width of each square and not go from corner to corner. When thinning, strips should point towards the edge of the net.
- v. The thickly garnished area must be large enough to cover the object to be concealed; and the nets must extend far enough beyond the object to allow for thinning of garnish. Thinning should produce a starfish pattern. (Fig. 3, *a, b.*)

Fig. 3a.



29' x 29'
Artillery net.

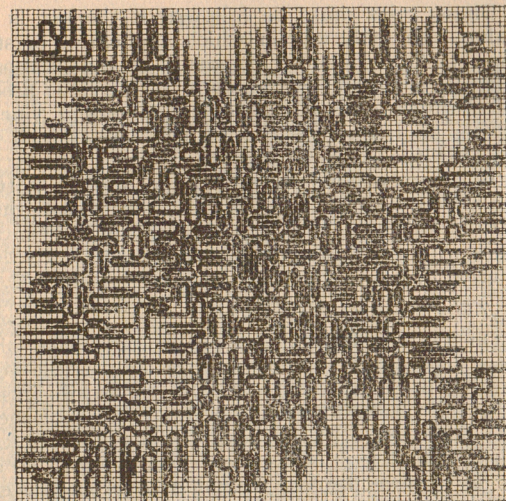


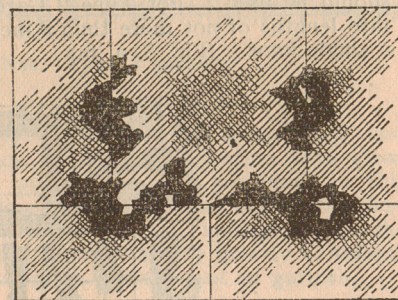
Fig. 3b.
24' x 24'
Vehicle
net.

- vi. Both ends of the strip must be firmly knotted and the strip should neither sag nor draw the mesh together.
- vii. In exposed positions the colour will eventually be beaten out of the net by the action of the wind. This, though possibly increasing the power of concealment of the net, is likely to make it conspicuous, and it will be necessary to re-garnish.

Fig. 4.



a. Artillery net.



b. Artillery net — with extensions.
Additional areas to be heavily garnished
indicated in solid black.

These rules must be followed if the net is to be of any value. The only way in which application of strip will differ for nets for different purposes is in the method of thinning out. The starfish pattern should always be used for a single net forming a single flat cover, whereas if a net is used as a drape, as frequently are vehicle nets, much less thinning towards the edges is needed.

When extensions are added the starfish pattern must be replanned and enlarged, with the result that additional garnish will be needed near the edge of the central net on the sides where the pattern is carried over on to the extensions. (Fig. 4, a, b.)

7. Thickening of garnish

Once a flat net has been put up, and particularly if extensions have been added, it is often possible to thicken the garnish towards the south side, and so increase the opaque area, as the shadow cast by this portion of the net is likely to be hidden by the net itself. This must, however, be done with great discretion as the deeper shadows so cast will tend to be thrown clear of the net's cover in the early morning and towards sunset, particularly in summer months.

8. Type 2 (Single Knot) Garnishing

Though the advantages of the method of garnishing described in para. 4 above are very great there are certain conditions under which reversion to the type of garnishing used in 1918 may be desirable. When much light spoil must be concealed and the texture of the background calls for a definitely dark garnish, the flat type described above may fail to give sufficient depth of tone and Type 2 Garnish should be used. For Type 2 Garnish, strips should be cut into lengths of not more than 9 inches and tied to the net by a single knot. (Fig. 5, a, b.)

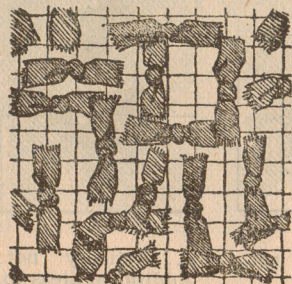
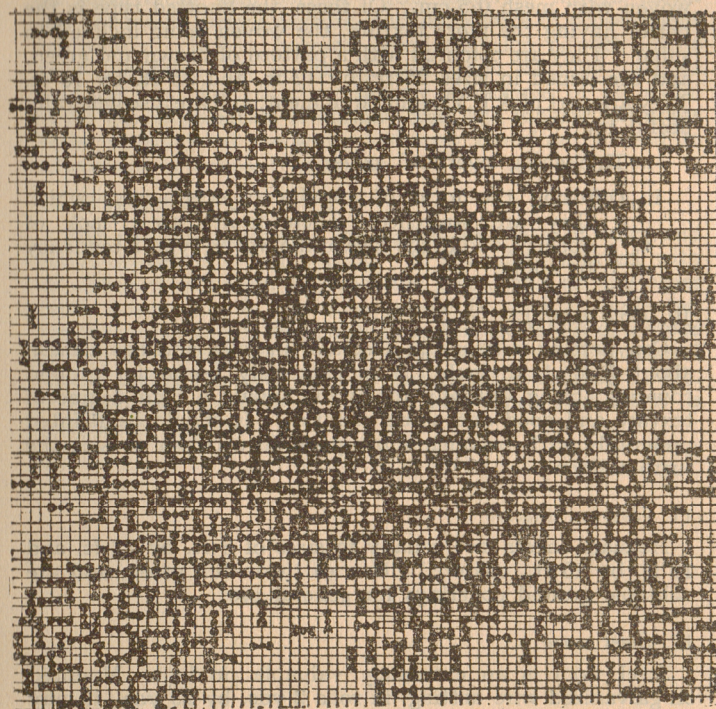


Fig. 5a.
Details of Type 2
garnish

Fig. 5b.



14' x 14' Net. Type 2 garnish.

Thicken up the opacity to 12 knots per square foot, and thin down to 4. A thick "hearthrug" texture with great covering power can be produced. Nets garnished in this way stand up well to close observation and are particularly suited for covering L.M.G.s. and small vehicles. But the danger from obliquely cast shadow is very greatly increased, and this method is much more extravagant in garnish.

Small knots added to the central thickly garnished parts of nets treated with flat strip will give a darker tone, prevent a tendency to shine and assist merging with dark textured background.

9. *Shrimp nets*

Shrimp nets are either knotted with mesh 1-cm. or woven with mesh 0.5-cm. Of these, the knotted type is the better having the more texture, the woven being inclined to shine. They are coloured with a pattern of brown and green, and are issued in sizes 25 ft. by 12 ft. and 35 ft. by 15 ft. They are part of A.F.Vs. unit equipment, and are also generally useful for :—

- i. Thickening overhead cover.
- ii. Diffusing the form of angular objects across which they are stretched. Their faults are: lack of opacity, and in the case of the woven type, a tendency to shine.

10. *Coir netting*

Coir netting is issued in sheets or in rolls, and has a mesh about $\frac{3}{8}$ to $\frac{1}{2}$ an inch. It is extremely useful for ground covering, being virtually rot-proof, having a high degree of texture and good anti-shine qualities. It should be painted preferably with bitumen spirit paint in a colour to suit the surroundings.

11. *Hessian sheets*

Hessian sheets are usually in sizes of 6 ft. by 12 ft. and 12 ft. by 20 ft., coloured either earth or dull green, and are valuable ground coverings for general use.

12. *Steel wool*

Steel wool is an extremely valuable product. Mounted on galvanized wire netting, in rolls 2 yds. by 25 yds., it may be issued in either of two qualities, fine and coarse, and in the following colours, grass green and earth. Further colours may be obtained by spraying with distemper type paint.

The wool can be tufted to produce a high texture or the fine grade can be kept smooth to match untextured surfaces. It is fireproof and transparent when viewed against the light; S.A.A. or A.Tk. shell may be fired through it. It may be used to represent grass, plough or trodden earth, and is the only concealment material which can be relied upon to defeat point blank observation. To make a continuous sheet, rolls should be cut to size, and wired together with 20 s.w.g. sewing wire. In very exposed positions it is advisable to erect a particularly solid framework of wires which should be spaced at 3 feet or shorter centres. The steel wool should be firmly attached at approximately every foot.

13. *Feathered wire netting*

Feathered wire netting consists of chicken feathers mounted on small mesh wire netting. This material, though useful has not much surface texture, and its powers of concealment are limited. It has, however, good diffusion powers and is very adaptable. It is strong, and when suitably painted may be used for covering dummy structures of all sorts, or for the construction of dummy trees and foliage. It offers little resistance to the wind, and may therefore be used to advantage in exposed positions.

14. *Wig netting*

Wig netting consists of the manes and tails of cows and horses woven into fish netting. It is usually sprayed with an adhesive paint, on the one side green, and on the other earth colour. It is therefore reversible, and a single net has the advantage of being able to match the colour of a green or brown background. It is suitable for small overhead covers, and can be used with advantage for concealing L.M.G. posts or over trenches or weapon pits, when such cover is considered essential.

13. Feathered wire netting consists of chicken feathers mounted on small mesh wire netting. This material, though useful, has not much special texture, and its power to protect birds is limited. It has, however, good diffusion power and is very adaptable. It is strong and when properly painted may be used for covering during storms, in all sorts of for the construction of dummy trees and foliage. It offers little resistance to the wind, and may therefore be used to advantage in exposed positions.

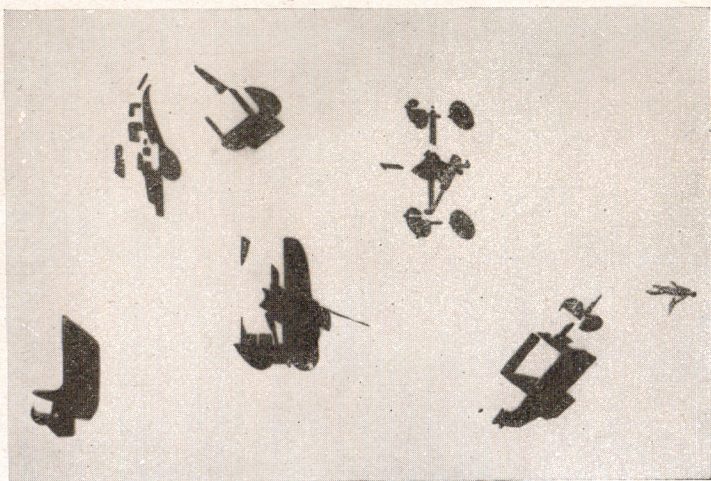
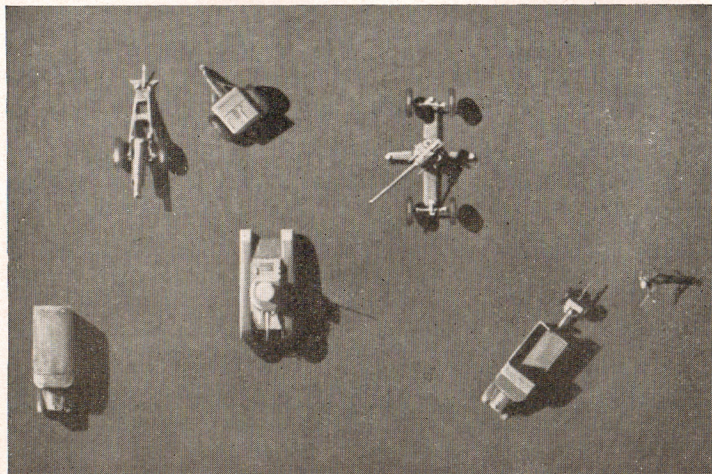
14. Wire netting is made of iron or steel wire, and is used for covering dummy trees and foliage. It is usually covered with an adhesive paint on the outside green, and on the inside with a light color. It is therefore reversible and a single net has the advantage of being able to match the color of a given or desired background. It is suitable for small objects, but will not be used with advantage for concealing large objects or dummy trees or foliage, when such cover is desired. Feathered wire netting is not used in this manner, and is therefore not suitable for this purpose.

15. Wire netting is made of iron or steel wire, and is used for covering dummy trees and foliage. It is usually covered with an adhesive paint on the outside green, and on the inside with a light color. It is therefore reversible and a single net has the advantage of being able to match the color of a given or desired background. It is suitable for small objects, but will not be used with advantage for concealing large objects or dummy trees or foliage, when such cover is desired. Feathered wire netting is not used in this manner, and is therefore not suitable for this purpose.

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SHADOW PORTRAITS



Objects and their Shadows.
Field Howitzer, Limber, Bofors,
Lorry, Tank, Wagon and A.Tk. Gun, Man.

SHINE



Shine from M.T. roofs.

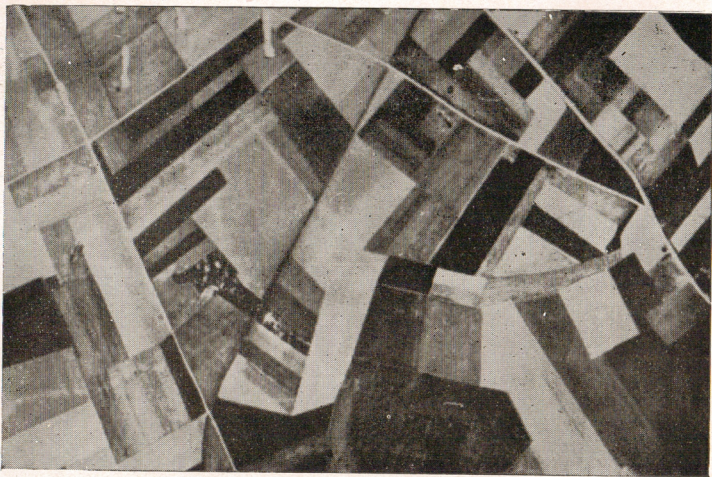


Shine from road surface and
trodden ground makes shadow
more conspicuous.



Huts, vehicle and pill box roofs, steel helmets and anti-gas capes
shining in the wet.

PATTERN OF BACKGROUND



Typical checker-board of Northern European agricultural land. No hedges.



Rural background. Hedged fields and pasture.

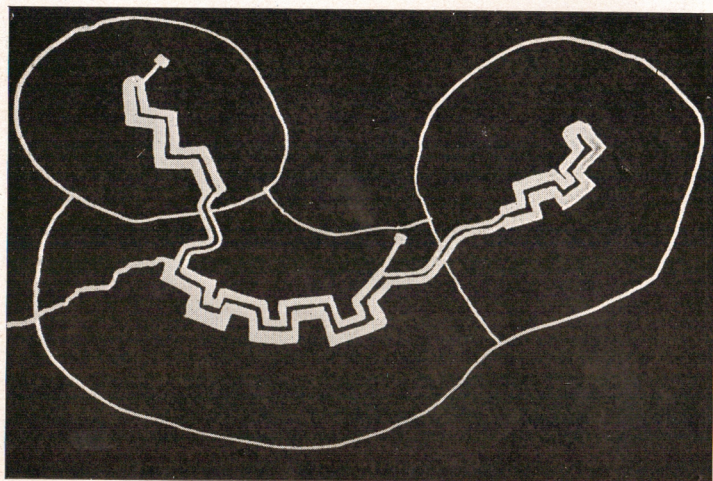


Scrub.

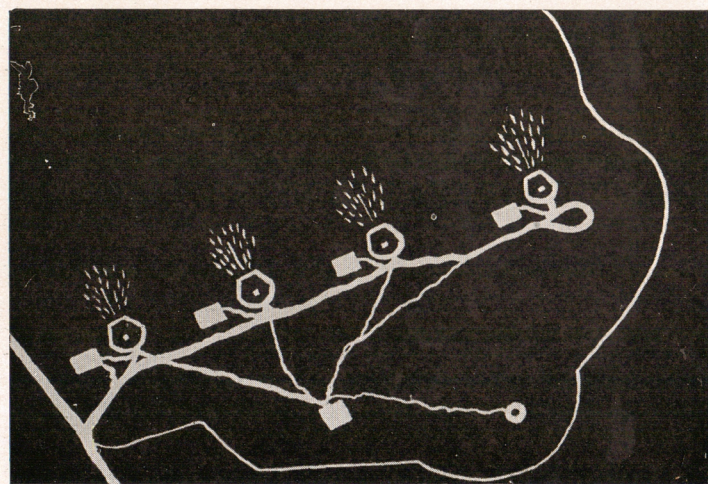


Scattered trees and woods.

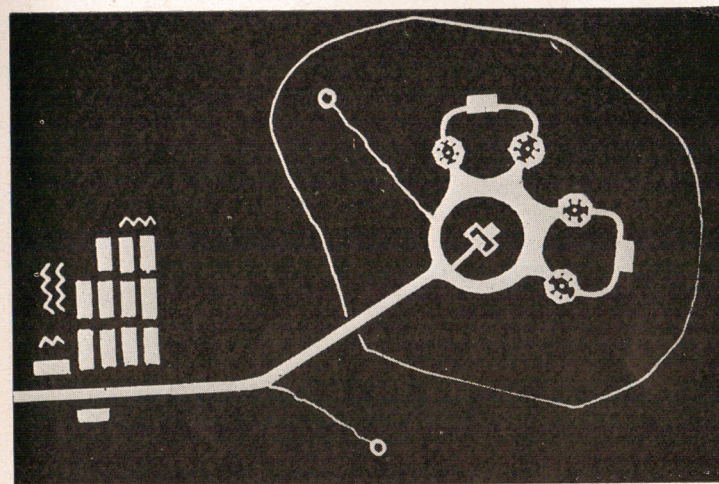
PATTERN OF WAR



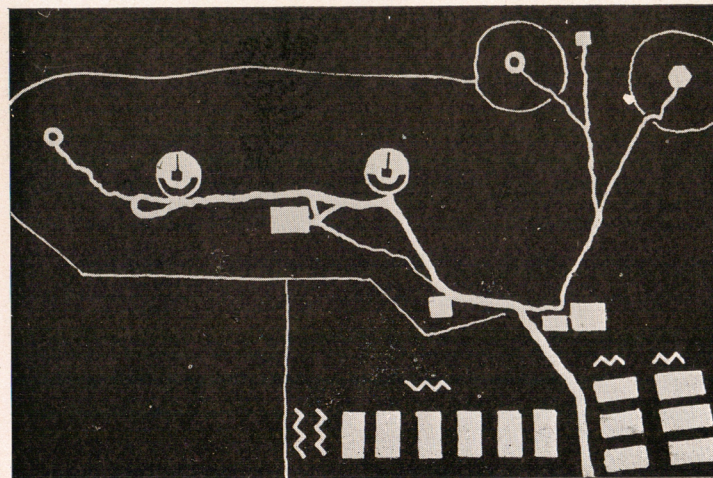
Platoon dug in.



Field Battery.



Heavy A.A. Site.

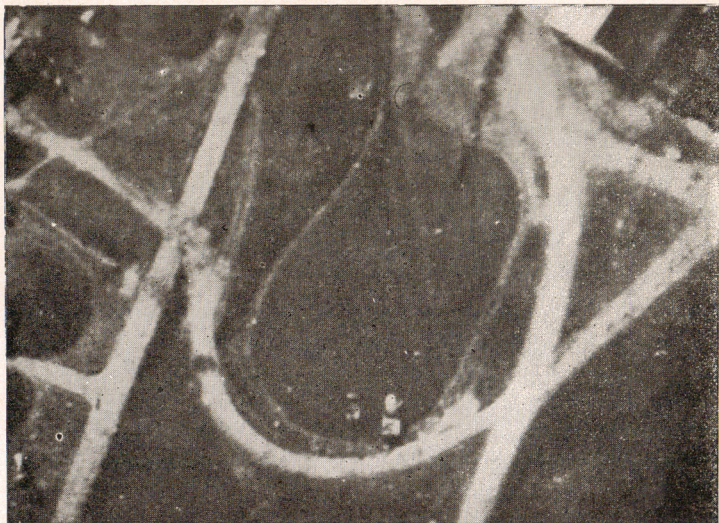


Fixed Defence Battery

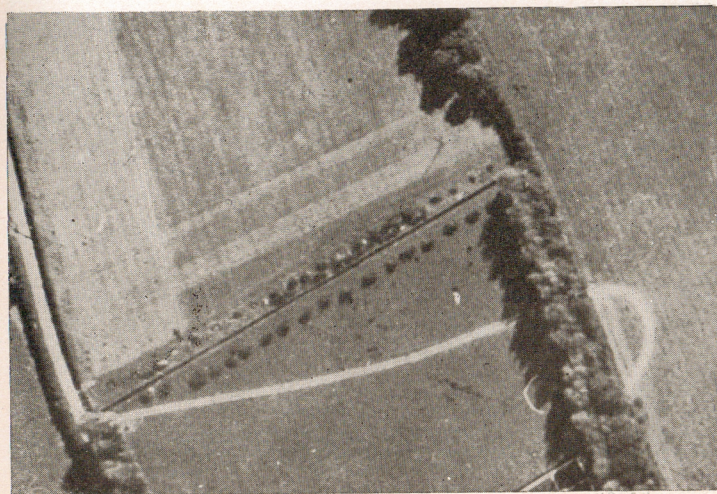
TRACK VISIBILITY



Tracks that catch the eye . . .



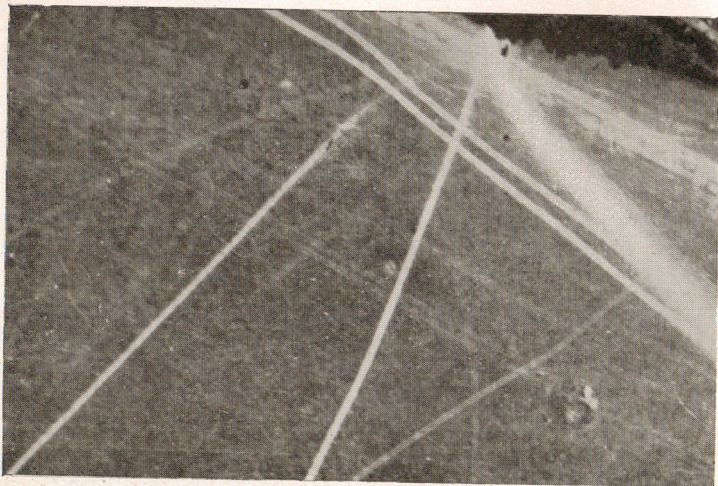
and aid air recognition.



Track marks the spot.



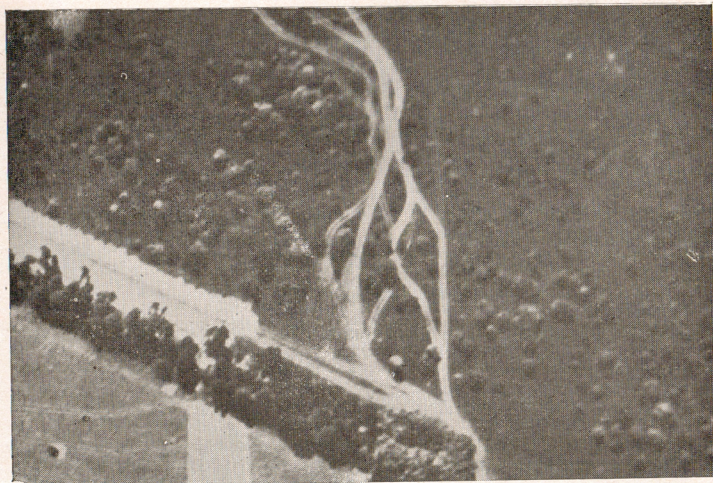
To the M.G. Post.



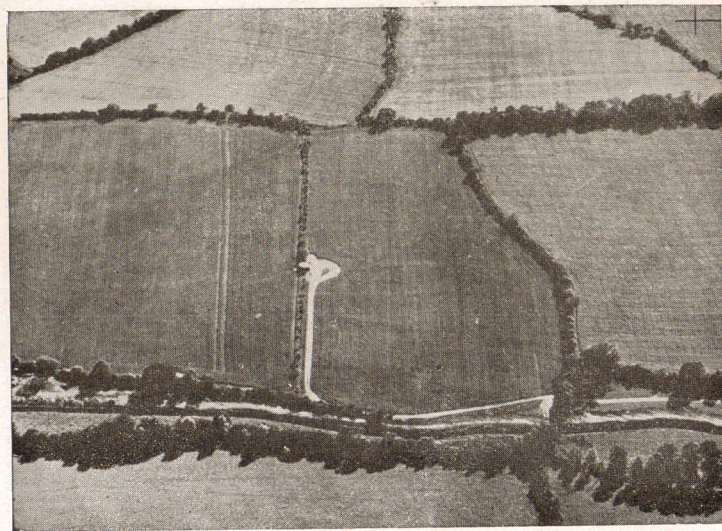
Into Harbour.



Tracks reveal well-sited dragons teeth.



Showing how many passed.



Good siting—wasted.

A good road approaches the line

Detour for a crater

Through this gap in the wire

Again forced off

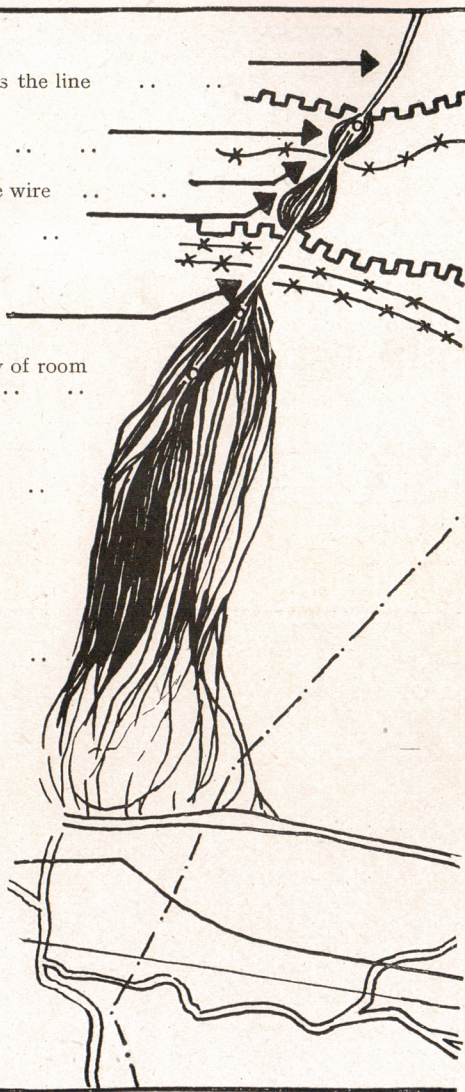
Converging to cross the support line.. ..

More craters and plenty of room to spread

They are easy to count ..

A waterlogged patch ..

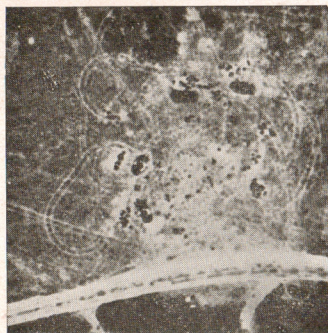
On dry ground tracks are lighter.. ..



See opposite page.



Volume of traffic can be measured by tracks that spread out.



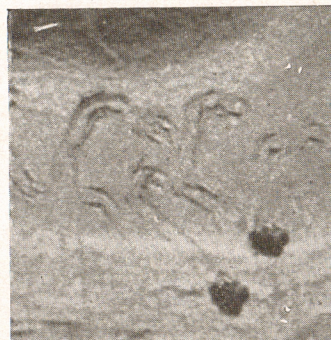
Mobile A.A.



Dragons.



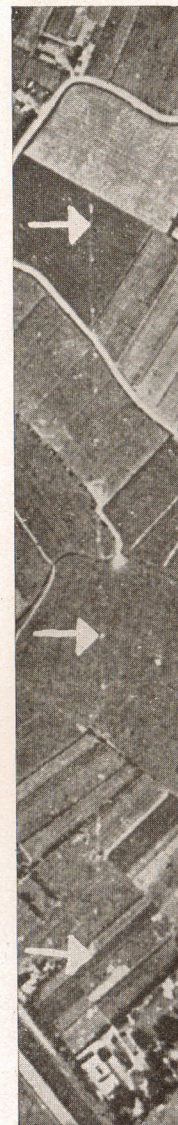
A.F.Vs.



Scout Cars.



Aircraft.



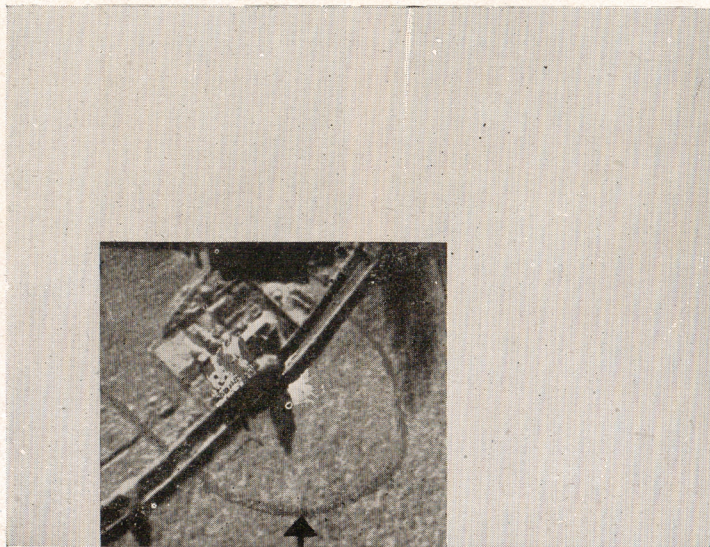
Overhead Cable.



Buried Cable.

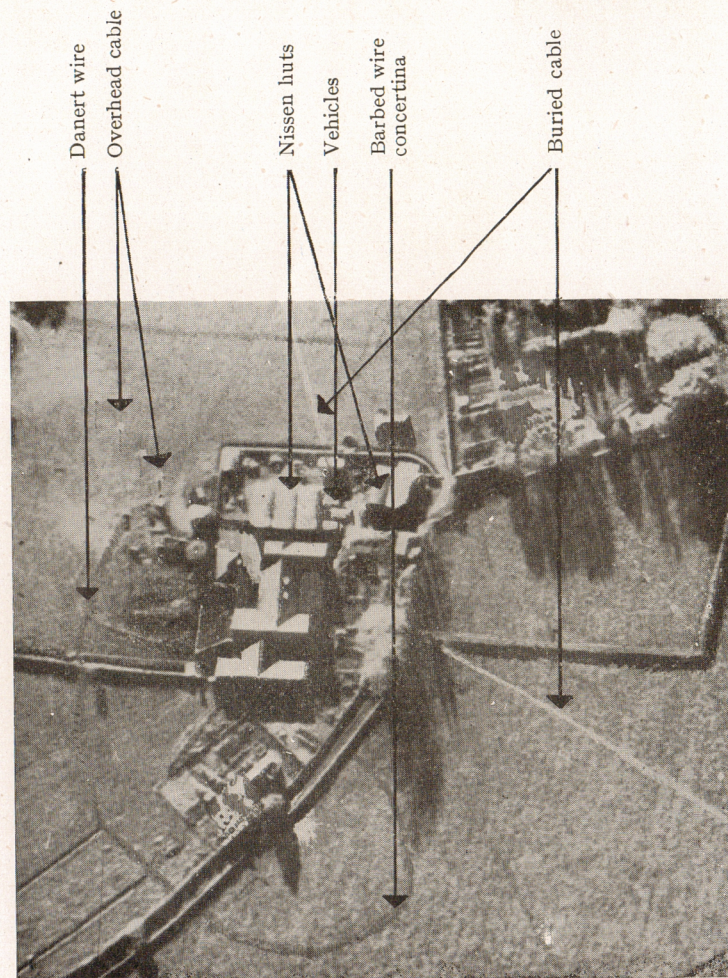


This patch of spoil catches the eye—it may mean nothing . . .

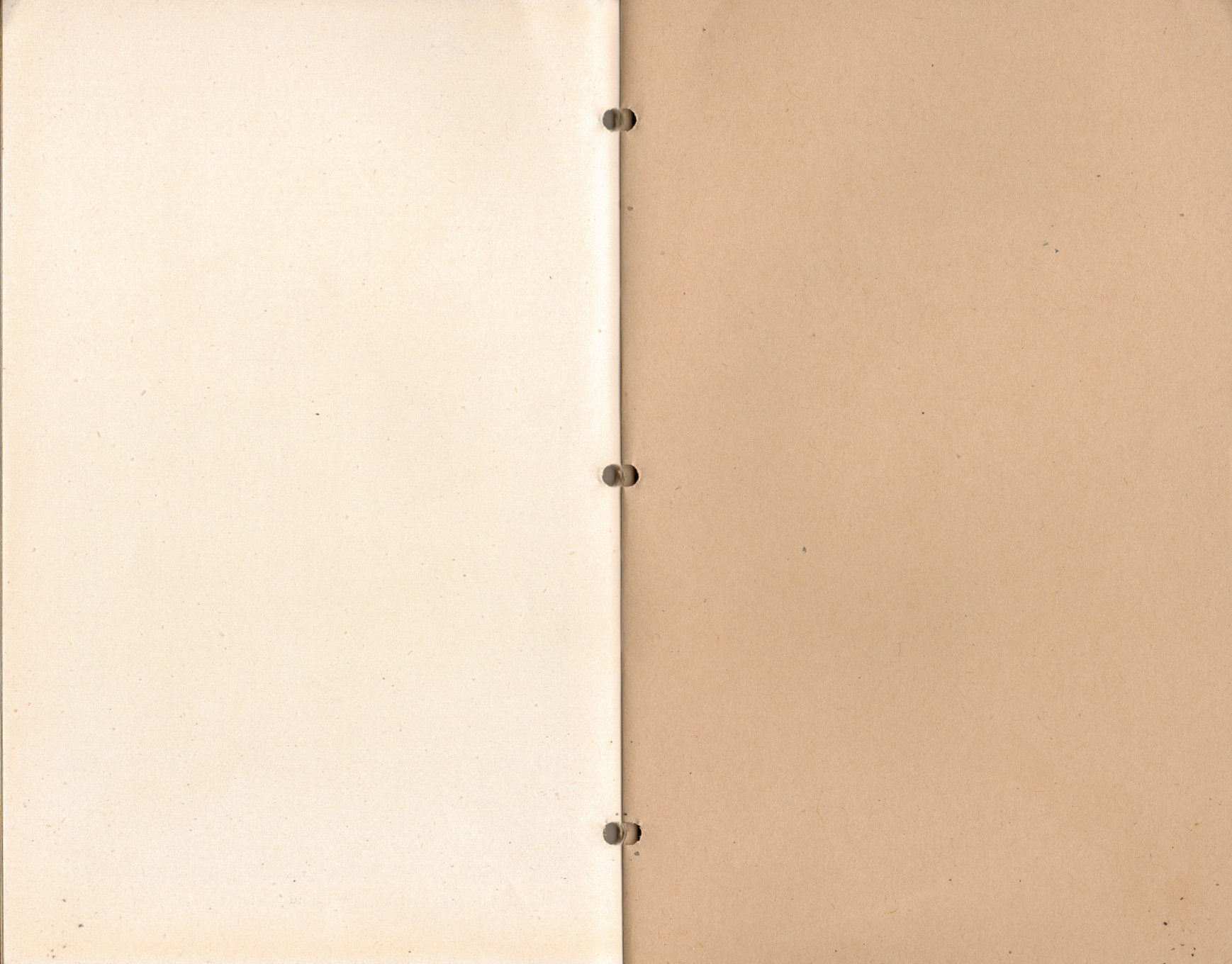


further inspection reveals wire—does this mean . . .

A PATCH OF SPOIL



an isolated defence post . . . or a headquarters ?





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